steep-sided valley in the near-by mountains, has plenty of room for growth on a typical intermont detrital plain; but the plain is unfortunately known as Sulphur Springs Valley. Hence no generic name is left for the true though narrow and shallow valley that is excavated in the plain by the ephemeral wet-weather drainage which flows southward into Mexico. When one looks northward along the smooth medial floor of the plain, it seems to rise gradually to the skyline, as if in a distant ridge; but the ridge recedes as one travels towards it; it is simply the ocean-like horizon of the nearly level surface.

The intermont detrital plain on which the flourishing residential and university city of Tucson stands, not so near the southeastern corner of Arizona as Douglas by about 100 miles, occupies a well-aggraded intermont basin of depression, which departs in a peculiar manner from the typical form that is seen in the Sulphur Springs Plain. The detrital slopes that slant forward from the encircling mountains around Tucson are clearly enough seen when one is near them; but they are out of sight from a good part of the plain between them, which is not level but has a gently undulating surface, as if it had recently been warped. Its faint swells and hollows, well exhibited for several miles next north and east of Tucson, are clearly unlike the shallow valleys that have elsewhere been normally excavated a little below the surface of the plain by several small intermittent rivers. The undulations are frequently strong enough to hide a cross-plain view of the piedmont slopes; indeed, if one stands in the center of a faint hollow, the outward view, instead of being unobstructed for many miles as it should be on the medial floor of an undisturbed plain, is rather closely circumscribed in nearly all directions, as it should not be.

Some justification for attributing the faint swells and hollows of the Tucson plain to deformational warping is found in the southeastern part of the same intermont basin, where the detrital deposits are clearly seen to have been strongly tilted and elaborately dissected and degraded since their deposition. The plain in the neighborhood of Tucson must have been deformed at a later date than this dissected southeastern extension of the intermont area, for it is practically undissected, except along the margins of its normal valleys. Another indication of warping is found in the present course of the Rillito, a wet-weather stream that flows westward across the aggraded basin not far north of Tucson and but a few miles south of the Santa Catalina Mountains, the highest of the enclosing ranges. The stream ought to have been pushed much farther away from these mountains by the abundant outwash of detritus that their deep-cut, steep-sided valleys have supplied to the intermont area; but the deformational warping appears to have compelled the stream to shift northward toward the mountains, in spite of the detrital outwash from them. In consequence of that shift, the piedmont detrital slope is sharply undercut by the northward encroachment of the stream upon it, and its dissection by washes from the mountains is thus promoted to an exceptional degree. The deformation of the plain seems, indeed, to have extended beyond the west-flowing Rillito, for between its contrained course and the base of the mountains, the detrital slope has assumed various irregular forms with a relief of 200 or 300 feet. Yet 20 or 30 miles farther west, the intermont plain has a strikingly level surface and so continues much farther, as if it were there in process of undisturbed aggradation.

There is, as above noted, little likelihood that the people of Arizona will change the nomenclature that has been so unsystematically applied to the intermont detrital plains on which many of them live; but for geographical purposes it is eminently desirable to call the plains by their proper name, and to recognize their subdivision into piedmont slopes and medial floors, as well as the not infrequent excavation of true valleys across them; and to recognize also the warping by which at least one of them seems to be gently deformed.

W. M. DAVIS

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SCIENTIFIC EVENTS

THE ELEVENTH EXPOSITION OF CHEMICAL INDUSTRIES[1]

WHEN the doors of the Eleventh Exposition of Chemical Industries are opened on September 26, those who will avail themselves of the opportunity will be impressed by the large number of diverse exhibits which will show something of the tremendous advancement that has been made, thanks to the continued application of science in cooperation with sound finance. Some 350 exhibitors will display a wide range of chemicals, chemical products and the apparatus, equipment and scientific instruments used in producing them, as well as many of the required raw materials.

The exhibits will be chiefly from this country, but there will be many representatives of foreign activities. The raw materials to be shown are from the Southern, the Southwestern and the Pacific States, and from the Dominion of Canada, displayed by government departments and railroads concerned with the industrial development of their territory. The section of chemical and chemical product exhibits is three times as numerous as five years ago. The machinery

[1] *Industrial and Engineering Chemistry.*

exhibit has increased in number and variety. The instruments exhibits will show marked strides in accuracy, application, simplicity and usefulness. In addition, there are sections devoted to laboratory supplies and equipment; to containers, packaging, labeling and shipping; to plastic compositions; to transportation, and to material handling.

Statistics of the sections specializing in laboratory equipment and supplies will give an impression of the scope of the present exposition, the number indicating the units in this section: laboratory furniture, 7; general laboratory apparatus and supplies, 7; special equipment, 13; balances, 3; research chemicals, 9; platinum ware, 3; glass, porcelain and silica ware, 9; filter-paper, 3; optical instruments, 3; electrical apparatus, 3; thermal precision instruments, 6; engineering equipment, 13, and publishers, 9.

The United States Government has prepared exhibits showing the work of three of its principal departments. The War Department will be represented by an exhibit from Chemical Warfare Service. The Department of Commerce will be represented by the Bureaus of the Census, Mines, Standards and Foreign and Domestic Commerce and the Committee on Wood Utilization; the Department of Agriculture by the Bureaus of Chemistry and Soils, including the Fixed Nitrogen Research Laboratory, Animal Industry, Forest Service and others. The National Safety Council will present, in complete form, the recently concluded exhaustive study on hazards caused by benzene when used in products designed for manufacturing and domestic use. There will be other educational exhibits and booths arranged by scientific societies, prominent among which will be that of the American Chemical Society.

The educational features of the exposition include an excellent program of motion pictures, the students' courses and meetings of certain scientific societies. The students' courses—a unique feature of this exposition—have become established and will be attended by representatives of many educational institutions of this and other countries.

The Fifth Chemical Industries Banquet will be held during the exposition on Wednesday evening, September 28, under the auspices of the Salesmen's Association of the American Chemical Industry, sponsored by the American Ceramic Society, New Jersey and New York Sections of the American Chemical Society, New York Section of the American Electrochemical Society, Chemical Warfare Association, Chemists' Club, Pressed Gas Manufacturers' Association, Chlorine Institute, American Institute of Chemical Engineers, American Leather Chemists' Association, Manufacturing Chemists Association, Société de Chimie Industrielle, Society of Chemical Industry, American Society for Testing Materials, American Association of Textile Chemists and Colorists, Synthetic Organic Chemical Manufacturers' Association and the Technical Association of the Pulp and Paper Industry, at the Hotel Roosevelt.

THE KANSAS GEOLOGICAL FIELD CONFERENCE

THE annual field conference of the Kansas Geological Society was held in northeastern Missouri, eastern Iowa and adjacent parts of Illinois and Wisconsin, from September 5 to September 10. About forty geologists participated. The object of the conference was to study the outcrops on the surface of the lower Paleozoic rocks, especially the Ordovician and the Mississippian, in the regions visited.

The party assembled at Columbia, Missouri, and on the morning of the fifth, started out under the direction of Professor E. B. Branson, of the department of geology of the University of Missouri. For three days studies were made along the bluffs of the Missouri and Mississippi Rivers and their tributaries, in northeastern Missouri, night stops being made at St. Louis and Hannibal.

At Burlington, Iowa, the party was joined by Dr. George F. Kay, state geologist of Iowa, with his assistants, and for three days Dr. Kay, Dr. O. A. Thomas and G. Marshall Kay conducted the party through eastern Iowa and adjacent parts of Illinois and Wisconsin.

The chief object of the trip was to correlate the various exposures which occur in northeastern Missouri and eastern Iowa with various formations encountered by deep drilling in central Kansas and northern Oklahoma. The oil-bearing sand, which in these latter states is known as the Wilcox sand, and which is the chief producer in a number of Oklahoma and Kansas oil wells, is believed to be the approximate equivalent of the St. Peter sandstone, of the states visited. The Decorah shales which contain certain typical fossils and are easily recognized in many of the deep wells in Kansas, was first named more than fifty years ago at Decorah in northeastern Iowa.

One of the principal points brought out on this conference is the intimate relation between pure science and practical affairs. Twenty years ago, or even five years ago, geologists would not have thought of traveling hundreds of miles to study outcrops of fossil-bearing rocks, in order to understand and interpret well logs in distant states.

The personnel of the party consisted of State Geologists Kay, of Iowa, Condra, of Nebraska, Moore, of Kansas, and Gould, of Oklahoma; also Professors